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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,682	07/28/2004	Longzhi Jiang	150966-1	4681

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EXAMINER	
BARRERA, RAMON M	

ART UNIT	PAPER NUMBER
2832	

DATE MAILED: 06/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/710,682	JIANG ET AL.	
	Examiner	Art Unit	
	Ramon M. Barrera	2832	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-24 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-24 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 28 July 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 7/28/04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 3, 10, 13, 17, 20, and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The recitation "said penetration thermally isolated from said coldhead" is unclear in that the penetration 230 is still indirectly cooled by the coldhead. Claims 10, 17, and 24 inherit the defect in their parent claim.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 10-14, 17-21, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Longsworth.

Longsworth discloses a zero boiloff cryogen cooled recondensing superconducting magnet assembly including superconducting magnet coils (col.1, line 52) suitable for magnetic resonance imaging comprising: a cryogen pressure vessel 14 to contain a liquid cryogen reservoir to provide cryogenic temperatures to said magnet coils for superconducting operation; a vacuum

vessel 16 spaced from and surrounding said pressure vessel; a first thermal shield 62 surrounding and spaced from said pressure vessel; a second thermal shield 60 surrounding and spaced from said first thermal shield, said second thermal shield intermediate said vacuum vessel and said first shield; a cryocooler 40 thermally connected by a first 64 and a second thermal interface 66 to said first and second thermal shields, respectively; a recondenser (44,46) positioned in the space between said pressure vessel and said first thermal shield and thermally connected by a thermal interface (at 43) to said cryocooler to recondense, back to liquid, cryogen gas provided from said pressure vessel; and means for returning the recondensed liquid cryogen to said pressure vessel ; wherein said second thermal shield surrounding said first thermal shield inherently reduces a radiation heat load from said first thermal shield to said pressure vessel lowering boiloff of cryogen gas under conditions of failure or power off of said cryocooler; wherein said cryocooler includes a double stage coldhead; including a penetration 24 extending through said vacuum vessel to said pressure vessel, said penetration thermally isolated from said coldhead; including a third thermal interface between said cryocooler and said recondenser, and wherein sensible heat from said boiloff of cryogen gas cools down at least one of a coldhead sleeve 34 of said coldhead, said penetration, and said first and second thermal shields; wherein said penetration includes a first penetration station 65 and a second penetration station 67 thermally connected by first and

second penetration thermal interfaces to said first and second thermal shields, respectively.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 5-9, 15-16, and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Longsworth, cited above, and further in view of Sugimoto.

Longsworth did not disclose tubing disposed on said first and second thermal shields in fluid communication with said boiloff of cryogen gas, said tubing in further fluid communication with a pressure relief valve configured to selectively vent said boiloff of cryogen gas; wherein said tubing includes copper tubing; wherein said tubing in fluid communication between said first and second thermal shields includes a low conductive transition tubing in order to reduce conduction of heat load during normal operation of said coldhead; wherein said low conductive tubing connects copper tubing disposed around each of said first and second thermal shields; wherein said low conductive tubing is a low thermally conductive tubing including stainless steel transition tubing.

Sugimoto discloses pipes (18P, 19P) carrying helium fixed on first and second thermal shields (18,19), which are mechanically coupled to a refrigerator

54, for the purpose of cooling the thermal shields. Since Longsworth and Sugimoto are both from the same field of endeavor, the purpose disclosed by Sugimoto would have been recognized in the pertinent art of Longsworth. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ tubing on Longsworth's thermal shields, as taught by Sugimoto, for the purpose of cooling the thermal shields. Longsworth discloses utilization of both high (copper) and low (stainless steel) thermal conductivity metals (col. 4, lines 8-13). It would have been obvious to one of ordinary skill in the art to employ in Longsworth in view of Sugimoto thermally insulating stainless steel transition tubing connecting thermally conductive copper tubing for the purpose of limiting heat transfer to designated heat exchanging regions of the tubing. Concerning the limitation regarding the tubing in further fluid communication with a pressure relief valve configured to selectively vent said boiloff of cryogen gas, pressure relief valves are deemed an inherent feature of gaseous refrigeration systems.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramon M. Barrera whose telephone number is (571) 272-1987. The examiner can normally be reached on Monday through Friday from 11 to 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin G. Enad can be reached on (571) 272-1990. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ramon M Barrera

Ramon M Barrera
Primary Examiner
Art Unit 2832

rmb